

17. A NOTE ON THE FOOD AND FEEDING HABITS OF TOR MAHSEER, *TOR TOR* (HAMILTON) FROM RIVER NARMADA¹

Tor tor (Hamilton), popularly known as Tor Mahseer is one of the game fishes of India. This species ranks first in the commercial catches of River Narmada near Hoshangabad and constitutes about 28·0% in the total landings and 47·0% in the carp fishery. It attains a maximum length of 4 feet (Hora 1940 and MacDonald 1948), but the largest specimen recorded from River Narmada at Hoshangabad measured 2 feet and 10 inches. As, in recent years, the culture of Mahseer fry in confined waters has been attempted for sport fishing and cultural purposes, knowledge of the natural food of Mahseer is essential. Though Hora (1940), Codrington (1946) and MacDonald (1948), among others have contributed on the bionomics and natural history of Tor Mahseer, detailed information on its food and feeding habits are so far lacking. Detailed observations on the food of this fish were therefore made at the Narmada Tapti Unit of the Central Inland Fisheries Research Institute at Hoshangabad. A preliminary statement of these observations is given in the present note.

The gut contents of 577 specimens (size range : 200-790 mm.) of this fish were analysed by eye estimation and occurrence method.

The fish mainly subsists on macrovegetation (48·5%), algae (14·5%), molluscs (10·5%) and insects (8·3%). The macrovegetation comprises a variety of submerged plants like *Vallisneria* including its seeds (8·7%), various kinds of grass (6·9%), *Naias* (2·5%), *Ceratophyllum* (1·2%), *Hydrilla* (0·4%), unidentified plants (1·6%), twigs (2·4%), roots (0·3%) and digested plant matter (24·5%). These items form the bulk of gut contents throughout the year. The algal food is formed by the filamentous and branched algae like *Spirogyra* (8·9%), *Chara* (2·5%), *Pithophora* (0·8%), *Mougeotia* (0·6%), *Zygnema* (0·5%) and unidentified semi-digested algae (1·2%). The molluscs are represented by *Corbicula striatella* (7·7%), *Indonaia caerulea* (0·2%) and *Parreysia favidens* (0·1%) among pelecypods (8·0%) and *Viviparus bengalensis* (2·0%) and *Melanoides (Tarebia) lineatus* (0·5%) among gastropods (2·5%). The aquatic insects which comprise mostly bottom dwelling insect larvae are represented by orders Trichoptera, mostly caddisworms (3·7%); Diptera, mostly *Chironomus* larvae (2·1%); Ephemeroptera, only nymphs (0·6%); Odonata, Dragonfly nymphs (0·4%); Hemiptera, adult water bugs and

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water boatmen (0.4%) ; and Coleoptera, both adults and larvae (0.1%). The digested insect matter made up 1.0% in the gut contents.

Besides these principal food components, the other items which are incidentally taken by the fish while feeding at bottom are fish remains consisting of bones and scales (0.2%), miscellaneous animal matter comprising crabs, crustacean appendages and centipedes (0.2%), debris consisting of cloth, paper, stone and charcoal pieces (7.9%) and sand and mud (7.8%). Smaller quantities of sand are also contributed by the crushed cases of caddisworms. The presence of fully and semi-digested plum fruit, (2.1%) in some of the guts is attributed to feeding of fish by the fishermen to lure them to fishing grounds.

It feeds voraciously from November to June (av. gastrosomatic index : 4.23). The feeding intensity of this fish is poor from July to October (av. gastrosomatic index : 1.78) which coincides with its breeding season.

The composition of the diet of Tor Mahseer clearly indicates that it is a marginal bottom feeder and is mainly herbivorous (macro-vegetation and algae : 63.0%) and carnivorous to a lesser degree (molluscs and insects : 18.8%) in feeding habits. Hora & Mukerji (1936) also stated that Tor Mahseer [*Tor tor* (Hamilton) = *Barbus tor* (Hamilton)] feeds 'preferably on filamentous algae and water plants'.

The protrusible and suctorial mouth of the fish and the presence of large quantities of sand, mud and debris (15.7%) in the guts are suggestive of bottom feeding habits. The marginal shallow portions of river bed where the water current is feeble are densely covered with submerged rooted vegetation and algae which invariably harbour insects, molluscs and other biota. While 'grazing' at the river bottom, the fish ingests macrovegetation and algae, along with insects and molluscs dwelling among them, and other bottom biota.

On the basis of herbivorous feeding habits of 'Katli', *Barbus (Lissochilus) hexagonolepis*, Saha & Sen (1956) have indicated its utility in the biological control of submerged aquatic vegetation in ponds. Since Tor Mahseer feeds extensively on underwater rooted vegetation and algae in its natural habitat, it is regarded as a true herbivore and could be used for the biological control of submerged weeds. Being a native species, the possibilities of using Tor Mahseer for successful biological control of weeds in ponds are worth exploring in India and intensive studies may be undertaken to evaluate its suitability as an effective weed control agent.

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NARMADA-TAPTI UNIT,
CENTRAL INLAND FISHERIES

RESEARCH INSTITUTE,
HOSHANGABAD (M.P.)

February 25, 1964.

V. R. DESAI

S. J. KARAMCHANDANI

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18. A CASE OF ALBINISM IN *HETEROPNEUSTES FOSSILIS* (BLOCH)

An immature albino specimen of *Heteropneustes fossilis* (Bloch) was obtained from a pond at Joysagar Fish Farm, Assam in the month of April, 1965. The entire body of the fish was white with a bluish patch on either side of the body behind pectoral fin. The colour of the eyes, even in living condition of the specimen was also white. Each eye had a slightly dark ring at the periphery caused probably by the colour of the internal tissue. The albino measured 131 mm. in length and weighed 14.6 gm. Abnormality neither in external nor internal organs of the albino was observed.

Albinism in fish is uncommon and has been described only in a few cat fishes and in an eel. Hora (1926) has recorded partial albinism in Magur, *Clarias batrachus* (Linn.). Other instances of albinism are recorded by Dean (1923) in *Clarias angularis* and *Silurus* sp. and by Aitkin (1937) in *Ictalurus punctatus*. Jones & Pantulu (1952) have described albinism in the freshwater eel, *Anguila bengalensis*. Gupta & Bhowmic (1958) recorded an albino *Arius jella* Day. The occurrence of albinism in *Heteropneustes fossilis* (Bloch) forms another record of this phenomenon among cat fish so far recorded in India.

RESEARCH OFFICER,
FISHERIES RESEARCH STATION,
JOYSAGAR, ASSAM.

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M. C. BARUAH